**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Currently Amended) A method for diagnosing a condition of a target tissue in a human or animal, comprising ~~the steps of~~:

a.) irradiating a target tissue with excitation electromagnetic radiation;

b.) ~~sensing a returned electromagnetic radiation returned from the target tissue;~~

~~c.)~~ ~~determining characteristics of~~ measuring the ~~returned~~ received electromagnetic radiation using at least ~~two~~ biochemical and morphological spectroscopic methods to generate spectroscopic measurements;

~~d.)~~c.) combining ~~the characteristics determined by~~ the at least ~~two~~ one biochemical and one morphological measurements ~~spectroscopic methods, thereby decoupling and detecting biochemical changes and morphological changes in the target tissue~~; and

~~e.)~~d.) determining a condition of the target tissue based on the combined ~~determined characteristics~~ measurements, wherein the biochemical spectroscopic method comprises at least one of fluorescence, time resolved fluorescence, or fluorescence anisotropy and the morphological spectroscopic method comprises at least one of absorption, reflectance, or polarized reflectance.

2. (Canceled)

3. (Canceled)

4. (Currently Amended) The method of claim [[3]] 1, wherein the time resolved fluorescence ~~measurements comprise~~ comprises at least one of phase modulation techniques, polarization anisotropic techniques and techniques that directly monitor the decay profile of fluorescent emissions.

5. (Canceled)

6. (Canceled)

7. (Currently Amended) ~~The method of claim 1,~~ A method for diagnosing a condition of a target tissue, comprising:

a.) irradiating a target tissue with excitation electromagnetic radiation;

b.) sensing a returned electromagnetic radiation returned from the target tissue;

c.) determining characteristics of the returned electromagnetic radiation using at least two spectroscopic methods;

d.) combining the characteristics determined by the at least two spectroscopic methods, thereby decoupling and detecting biochemical changes and morphological changes in the target tissue; and

e.) determining a condition of the target tissue based on the combined determined characteristics, wherein step b.) comprises sensing electromagnetic radiation emitted from the target tissue in response to the excitation electromagnetic radiation and then subsequently sensing excitation electromagnetic radiation that is scattered from the target tissue.

8. (Original) The method according to claim 7, wherein a critical timing window, which is defined as the time period between sensing electromagnetic radiation emitted from the target tissue in response to the excitation electromagnetic radiation and subsequently sensing excitation electromagnetic radiation that is scattered from the target tissue, is not greater than approximately 0.25 seconds.

9. (Original) The method of claim 7, wherein step c.) comprises making intensity based measurements on both said electromagnetic radiation emitted from the target tissue in response to the excitation electromagnetic radiation and said excitation electromagnetic radiation that is scattered from the target tissue.

10. (Currently Amended) The method of claim 1, wherein step b.) comprises ~~sensing approximately simultaneously~~ measuring electromagnetic radiation ~~returned~~ received from a plurality of interleaved interrogation points distributed over the target tissue.

11. (Currently Amended) The method according to claim [[10]] 1, further comprising ~~a step of~~ dividing the target tissue into ~~a first set of~~ two or more field areas, wherein step ~~c.)~~ d.) comprises determining ~~characteristics of the returned electromagnetic radiation~~ a condition of the target tissue in each of said ~~first set of~~ field areas ~~using at least two spectroscopic methods, step d.) comprises combining the characteristics determined by the at least two spectroscopic methods for each of said first set of field areas and step e.) comprises~~ and then further determining a condition of the target tissue by comparing ~~the combined determined characteristics of~~ each of said ~~first set of~~ field areas.

12. (Currently Amended) ~~The method according to claim 11,~~ A method for diagnosing a condition of a target tissue, comprising:

a.) irradiating a target tissue with excitation electromagnetic radiation;

b.) sensing a returned electromagnetic radiation returned from the target tissue;

c.) determining characteristics of the returned electromagnetic radiation using at least two spectroscopic methods;

d.) combining the characteristics determined by the at least two spectroscopic methods, thereby decoupling and detecting biochemical changes and morphological changes in the target tissue;

e.) determining a condition of the target tissue based on the combined determined characteristics; ~~further comprising a step of~~

f) identifying visual characteristics of the target tissue; and

g.) dividing the target tissue into a first set of field areas, wherein step c.) comprises determining characteristics of the returned electromagnetic radiation in each of said first set of field areas using at least two spectroscopic methods, step d.) comprises combining the characteristics determined by the at least two spectroscopic methods for each of said first set of field areas and step e.) comprises determining a condition of the target tissue by comparing the combined determined characteristics of each of said first set of field areas; and wherein the field areas are selected based on the identified visual characteristics of the target tissue.

13. (Currently Amended) ~~The method according to claim 11,~~ A method for diagnosing a condition of a target tissue, comprising:

a.) irradiating a target tissue with excitation electromagnetic radiation;

b.) sensing a returned electromagnetic radiation returned from the target tissue;

c.) determining characteristics of the returned electromagnetic radiation using at least two spectroscopic methods;

d.) combining the characteristics determined by the at least two spectroscopic methods, thereby decoupling and detecting biochemical changes and morphological changes in the target tissue;

e.) determining a condition of the target tissue based on the combined determined characteristics; and

f.) dividing the target tissue into a first set of field areas, wherein step c.) comprises determining characteristics of the returned electromagnetic radiation in each of said first set of field areas using at least two spectroscopic methods, step d.) comprises combining the characteristics determined by the at least two spectroscopic methods for each of said first set of field areas and step e.) comprises determining a condition of the target tissue by comparing the combined determined characteristics of each of said first set of field areas, and wherein the field areas are selected based on previously identified characteristics of the target tissue.

14. (Original) The method according to claim 13, wherein the previously identified characteristics of the target tissue comprise characteristics of the target tissue identified through previous testing of the target tissue using at least one of cytology, colposcopy and histopathology.

15. (Currently Amended) ~~The method of claim 11,~~ A method for diagnosing a condition of a target tissue, comprising:

a.) irradiating a target tissue with excitation electromagnetic radiation;

b.) sensing a returned electromagnetic radiation returned from the target tissue;

c.) determining characteristics of the returned electromagnetic radiation using at least two spectroscopic methods;

d.) combining the characteristics determined by the at least two spectroscopic methods, thereby decoupling and detecting biochemical changes and morphological changes in the target tissue;

e.) determining a condition of the target tissue based on the combined determined characteristics;

f.) dividing the target tissue into a first set of field areas, wherein step c.) comprises determining characteristics of the returned electromagnetic radiation in each of said first set of field areas using at least two spectroscopic methods, step d.) comprises combining the characteristics determined by the at least two spectroscopic methods for each of said first set of field areas and step e.) comprises determining a condition of the target tissue by comparing the combined determined characteristics of each of said first set of field areas; and

~~further comprising,~~

g.) after determining a condition of the target tissue by comparing the combined determined characteristics of each of said first set of field areas, re-dividing the target tissue into a second set of field areas, different from said first set of field areas and the determining characteristics of the returned electromagnetic radiation in each of said second set of field areas using at least two spectroscopic methods, combining the characteristics determined by the at least two spectroscopic methods for each of said second set of field areas and determining a condition of the target tissue by comparing the combined determined characteristics of each of said second set of field areas.

16. (Currently Amended) ~~The method of claim 10,~~ A method for diagnosing a condition of a target tissue, comprising:

a.) irradiating a target tissue with excitation electromagnetic radiation;

b.) sensing a returned electromagnetic radiation returned from the target tissue;

c.) determining characteristics of the returned electromagnetic radiation using at least two spectroscopic methods;

d.) combining the characteristics determined by the at least two spectroscopic methods, thereby decoupling and detecting biochemical changes and morphological changes in the target tissue; and

e.) determining a condition of the target tissue based on the combined determined characteristics, wherein the method is performed using an apparatus comprising an irradiation source, a detector and a processor, and wherein ~~the step of~~ sensing electromagnetic radiation returned from a plurality of interrogation points comprises ~~the steps of~~:

sensing electromagnetic radiation returned from the target tissue from a first subset of the plurality of interrogation points;

moving at least one of the apparatus and the tissue;

sensing electromagnetic radiation returned from the target tissue from a second subset of the plurality of interrogation points;

again moving at least one of the apparatus and the tissue; and

continuing this process until sensing has been performed at all of the plurality of interrogation points.

17. (Currently Amended) The method of claim 1, further comprising ~~a step of~~ generating a map of conditions of different portions of the target tissue based on the combined determined characteristics.

18. (Currently Amended) The method of claim 1, further comprising ~~a step of~~ conducting a pattern recognition process to determine whether a pattern of conditions exists within the target tissue.

19. (Currently Amended) A system for determining a condition of a target tissue in a human or animal, comprising:

a electromagnetic radiation source for ~~providing excitation electromagnetic radiation~~ irradiating tissue;

a device that couples the ~~excitation~~ electromagnetic radiation to a target tissue;

a device that senses electromagnetic radiation ~~returned~~ received from the target tissue; and

a processor configured to determine characteristics of the ~~returned electromagnetic radiation~~ target tissue using at least ~~two~~ one biochemical and one morphological spectroscopic methods, wherein the processor combines the characteristics determined by each of the ~~at least~~ two or more spectroscopic methods ~~in order to decouple and detect biochemical changes and morphological changes in the target tissue~~ and determines a condition of the target tissue based on the combined determined characteristics, and wherein the biochemical spectroscopic method comprises at least one of fluorescence, time resolved fluorescence, or fluorescence anisotropy and the morphological spectroscopic method comprises at least one of absorption, reflectance, or polarized reflectance.

20. (Canceled)

21. (Canceled)

22. (Currently Amended) The system of claim 19, wherein the device that senses ~~returned~~ received electromagnetic radiation is configured to substantially simultaneously sense fluorescent radiation emitted by endogenous fluorophores in response to the excitation radiation and excitation electromagnetic radiation that is scattered from the target tissue.

23. (Currently Amended) The system of claim 22, wherein the processor ~~makes~~ uses intensity based measurements on both said fluorescent radiation emitted by endogenous fluorophores in response to the excitation radiation and said excitation electromagnetic radiation that is scattered from the target tissue.

24. (Currently Amended) ~~The system of claim 19,~~ A system for determining a condition of a target tissue in a human or animal, comprising:

an electromagnetic radiation source for providing excitation electromagnetic radiation;

a device that couples the excitation electromagnetic radiation to a target tissue;

a device that senses electromagnetic radiation returned from the target tissue; and

a processor configured to determine characteristics of the returned electromagnetic radiation using at least two spectroscopic methods, wherein the processor combines the characteristics determined by each of the at least two spectroscopic methods in order to decouple and detect biochemical changes and morphological changes in the target tissue

and determines a condition of the target tissue based on the combined determined characteristics, wherein the device that senses electromagnetic radiation is configured to first sense fluorescent radiation emitted by fluorophores in response to the excitation radiation and then subsequently sense excitation electromagnetic radiation that is scattered from the target tissue.

25. (Original) The system according to claim 24, wherein a critical timing window, which is defined as the time period between sensing electromagnetic radiation emitted from the target tissue in response to the excitation electromagnetic radiation and subsequently sensing excitation electromagnetic radiation that is scattered from the target tissue, is not greater than approximately 0.25 seconds.

26. (Currently Amended) The system of claim 24, wherein the processor ~~makes~~ uses intensity based measurements on both said fluorescent radiation emitted by endogenous fluorophores in response to the excitation radiation and said excitation electromagnetic radiation that is scattered from the target tissue.

27. (Currently Amended) The system of claim 19, wherein the device that senses electromagnetic radiation is configured to sense ~~approximately~~ substantially simultaneously

electromagnetic radiation returned from a plurality of interleaved interrogation points distributed over the target tissue.

28. (Currently Amended) The system according to claim [[27]] 19, wherein the processor divides the target tissue into ~~a first set of~~ two or more field areas, determines characteristics of the ~~returned~~ received electromagnetic radiation in each of said ~~first set of~~ field areas ~~using said at least two spectroscopic methods, combines the characteristics determined by each of said at least two spectroscopic methods for each of said first set of field areas~~ and determines a condition of the target tissue ~~in each of said first set of field areas~~ based on comparing the ~~combined~~ determined characteristics of the respective field areas.

29. (Currently Amended) ~~The system according to claim 28,~~ A system for determining a condition of a target tissue in a human or animal, comprising:

a electromagnetic radiation source for providing excitation electromagnetic radiation;

a device that couples the excitation electromagnetic radiation to a target tissue;

a device that senses electromagnetic radiation returned from the target tissue; and

a processor configured to determine characteristics of the returned electromagnetic radiation using at least two spectroscopic methods, wherein the processor combines the characteristics determined by each of the at least two spectroscopic methods in

order to decouple and detect biochemical changes and morphological changes in the target tissue and determines a condition of the target tissue based on the combined determined characteristics, wherein the processor divides the target tissue into a first set of field areas, determines characteristics of the returned electromagnetic radiation in each of said first set of field areas using said at least two spectroscopic methods, combines the characteristics determined by each of said at least two spectroscopic methods for each of said first set of field areas and determines a condition of the target tissue in each of said first set of field areas based on the combined determined characteristics of the respective field areas, and wherein the target tissue is divided into field areas according to previously identified characteristics of the target tissue.

30. (Original) The system according to claim 29, wherein the previously identified characteristics of the target tissue are visually identified characteristics of the target tissue.

31. (Original) The system according to claim 29, wherein the previously identified characteristics of the target tissue are characteristics of the target tissue identified through previous testing of the target tissue using at least one of cytology, colposcopy and histopathology.

32. (Original) ~~The system of claim 28,~~ A system for determining a condition of a target tissue in a human or animal, comprising:

an electromagnetic radiation source for providing excitation electromagnetic radiation;

a device that couples the excitation electromagnetic radiation to a target tissue;

a device that senses electromagnetic radiation returned from the target tissue; and

a processor configured to determine characteristics of the returned electromagnetic radiation using at least two spectroscopic methods, wherein the processor combines the characteristics determined by each of the at least two spectroscopic methods in order to decouple and detect biochemical changes and morphological changes in the target tissue and determines a condition of the target tissue based on the combined determined characteristics, wherein the processor divides the target tissue into a first set of field areas, determines characteristics of the returned electromagnetic radiation in each of said first set of field areas using said at least two spectroscopic methods, combines the characteristics determined by each of said at least two spectroscopic methods for each of said first set of field areas and determines a condition of the target tissue in each of said first set of field areas based on the combined determined characteristics of the respective field areas, and wherein the processor is further configured to, after the processor determines a condition of the target tissue in each of the first set of field areas based on the combined determined characteristics of the respective field areas, divide the target tissue into a second set of field areas, different from the

first set of field areas, determine characteristics of the returned electromagnetic radiation in each of said second set of field areas using said at least two spectroscopic methods, combine the characteristics determined by each of said at least two spectroscopic methods for each of said second set of field areas and determine a condition of the target tissue in each of the second set of field areas based on the combined determined characteristics of the respective field areas.

33. (Original) The system of claim 27, wherein the device that senses electromagnetic radiation is movable to a plurality of pre-determined positions and is configured to sense electromagnetic radiation returned from a subset of the plurality of interrogation points at each pre-determined position.

34. (Original) The system of claim 19, wherein the processor is also configured to conduct a pattern recognition process to determine whether a pattern of conditions exists within the target tissue.

35. (Original) The system of claim 19, wherein the processor is also configured to create a map of determined conditions of different portions of a target tissue.

36. (Currently Amended) A method for diagnosing diseased tissue in a human or animal, comprising:

irradiating a target tissue with excitation electromagnetic radiation;

sensing ~~a returned~~ an electromagnetic radiation ~~returned~~ received from the target tissue;

determining characteristics of the ~~returned~~ received electromagnetic radiation using at least ~~two~~ first and second spectroscopic methods, thereby decoupling and detecting biochemical changes and morphological changes in the target tissue occurring due to disease; and

determining a condition of the target tissue based the determined characteristics, wherein the first spectroscopic method comprises at least one of fluorescence, time resolved fluorescence, or fluorescence anisotropy and the second spectroscopic method comprises at least one of absorption, reflectance, or polarized reflectance.

37. (Currently Amended)) A system for determining a condition of a target tissue in a human or animal, comprising:

an electromagnetic radiation source for providing excitation electromagnetic radiation;

a device that couples the excitation electromagnetic radiation to a target tissue;

a device that senses electromagnetic radiation ~~returned~~ received from the target tissue; and

a processor configured to determine characteristics of the ~~returned~~ received electromagnetic radiation using at least ~~two~~ first and second spectroscopic methods, thereby decoupling and detecting biochemical changes and morphological changes in the target tissue occurring due to disease and determine a condition of the target tissue based on the determined characteristics, wherein the first spectroscopic method comprises at least one of fluorescence, time resolved fluorescence or fluorescence anisotropy and the second spectroscopic method comprises at least one of absorption, reflectance, or polarized reflectance.

38. (New) An endoscope configured to perform the method of claim 16, wherein the endoscope is further configured to sense electromagnetic radiation received from the plurality of interrogation points within a critical timing window.

39. (New) An endoscope comprising the system of claim 19, wherein the endoscope is further configured to sense electromagnetic radiation received from a plurality of interrogation points within a critical timing window.

40. (New) An endoscope comprising the system of claim 27, wherein the endoscope is further configured to sense electromagnetic radiation received from the plurality of interleaved interrogation points within a critical timing window.

41. (New) The method of claim 10, wherein the plurality of interleaved interrogation points are spaced so as to minimize crosstalk between the plurality of interrogation points while preserving spatial resolution.

42. (New) The method of claim 27, wherein the plurality of interleaved interrogation points are spaced so as to minimize crosstalk between the plurality of interrogation points while preserving spatial resolution.

43. (New) The method according to claim 1, further comprising comparing the combined measurements to reference measurements made on tissue of the same human or animal.

44. (New) The method according to claim 19, wherein the processor is further configured to compare the combined measurements to reference measurements made on tissue of the same human or animal.

45. (New) The method according to claim 1, wherein the method is configured to detect changes in a target tissue due to cancer.

46. (New) The system according to claim 19, wherein the system is configured to detect changes in a target tissue due to cancer.

47. (New) The method according to claim 36, wherein the method is configured to detect changes in a target tissue due to cancer.

48. (New) The method according to claim 11, wherein variability of the field areas is used to determine a characteristic of the tissue.

49. (New) The method according to claim 1, wherein step b.) comprises measuring electromagnetic radiation received from a first set of interrogation points and then sensing electromagnetic radiation returned from a second set of interrogation points interleaved with the first set of interrogation points.

50. (New) The method according to claim 1, wherein determining the condition of the target tissue includes the assignment of a score related to the condition of the tissue.

51. (New) The method of claim 10, wherein each group of one or more interrogation points is assigned a score related to the condition of the tissue.